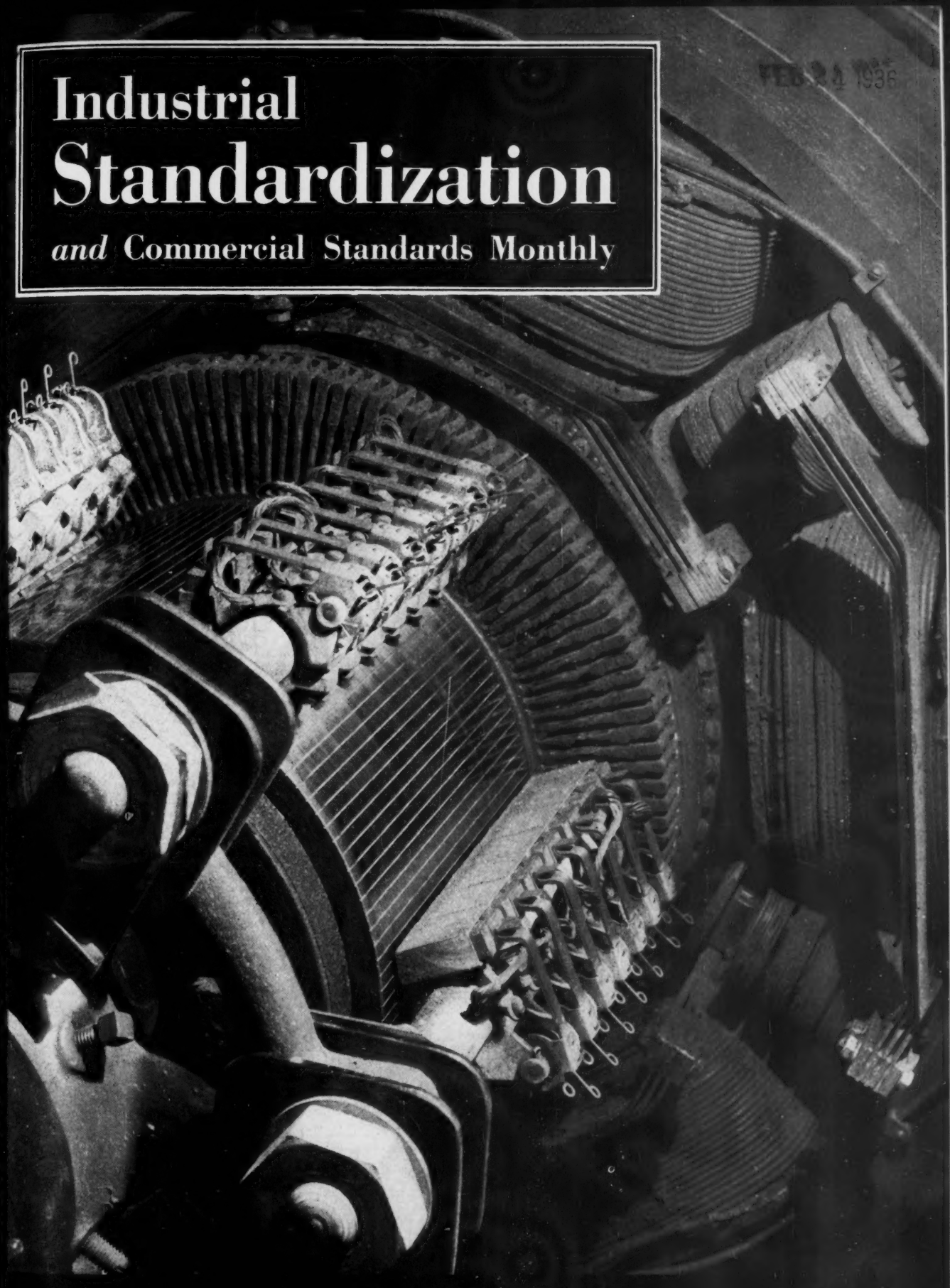
Industrial Standardization

and Commercial Standards Monthly



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FEBRUARY 1936

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Five Kinds of Machines Covered in New Rotating Electrical Machinery Standards

Fundamental Requirements for Direct-Current, Synchronous, and Induction Machines, Synchronous Converters, and A-C and D-C Fractional Horse-Power Motors Are Given in One Document, in Newly Approved American Standards

"Common Language" Is Now Available in Single-Volume Publication for All Who Use Electrical Machines

by

L. F. Adams[1]

Chairman, Sectional Committee on Rotating Electrical Machinery

THE publication of a volume of American Standards for Rotating Electrical Machines marks an important step in the progress of standardization of electrical apparatus initiated by the American Institute of Electrical Engineers (A.I.E.E.) whose first standards were published in 1899. Those first standards dealt with transformers and transmission lines as well as rotating machines, but more extensively with rotating machines, perhaps because of the existence of the

[1]Mr. Adams is commercial engineer, General Electric Company, Schenectady, N. Y.

Six Squirrel-Cage Induction Motors Installed on a Boring, Drilling, and Milling Machine

Photographs Courtesy General Electric Company



numerous types. The field of rotating machines is a large and important one, a reason being that they function at least twice in the application of all electricity for mechanical power purposes; *i.e.*, initially in the generation and finally in the utilization.

As an indication of the importance with which the early standardization work was regarded, it is interesting to note that six of the seven members of the A.I.E.E. Standardizing Committee which submitted the first A.I.E.E. rules had been, or later became, presidents of the A.I.E.E. That it was properly so regarded is attested by the growth of standardization in many lines to an extent which justifies this monthly publication entirely devoted to the subject.

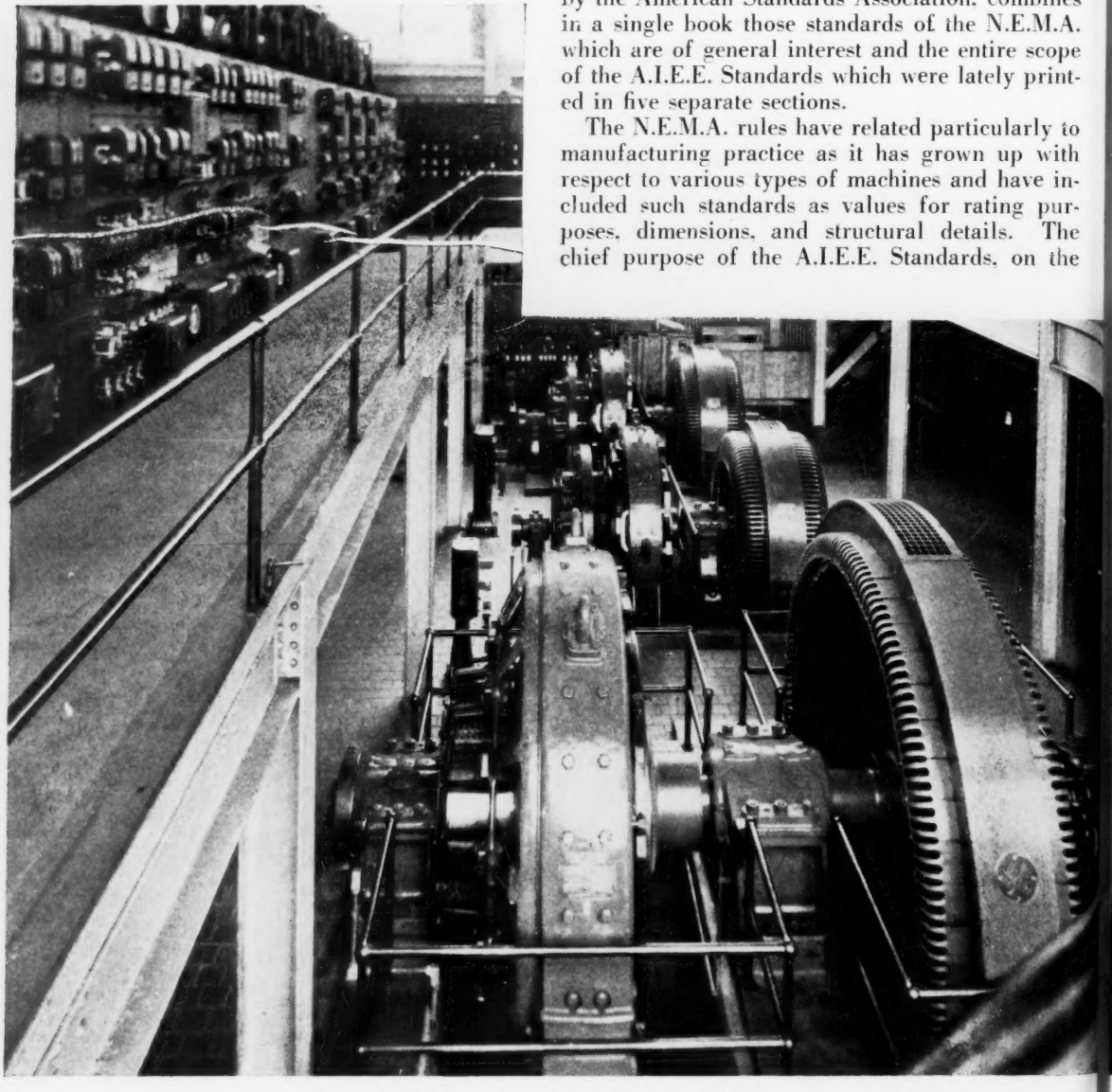
The printed program for the 1910 Annual Meeting of the American Association of Electric Motor Manufacturers recommended a page of motor standards for adoption. This association soon after became the Electric Power Club which in 1914 published a considerable number of standard rules relating to motors and generators. In the reorganized body, the National Electrical Manufacturers Association (N.E.M.A.), manufacturers' standards have continued to increase.

Present Publication Combines Two

The present American Standard, as approved by the American Standards Association, combines in a single book those standards of the N.E.M.A. which are of general interest and the entire scope of the A.I.E.E. Standards which were lately printed in five separate sections.

The N.E.M.A. rules have related particularly to manufacturing practice as it has grown up with respect to various types of machines and have included such standards as values for rating purposes, dimensions, and structural details. The chief purpose of the A.I.E.E. Standards, on the

Steel-Mill Motor Generator Sets



other hand, has been to define the terms and conditions which characterize rating and behavior with special reference to the conditions of acceptance tests. The line of demarcation has not been distinct, and with the growth and increased detail of both the A.I.E.E. and N.E.M.A. standards this dividing line has become less distinct.

The American Standards Association provided the medium by which the rules could be combined and more closely harmonized to make available an American Standard complete in all important items.

Many of the headings of the first A.I.E.E. Standards were the same as today, and many of the rules are carried forward with little or no significant change. Whole sentences can be found which in the present rules remain the same. This is probably due not only to unchanging basic principles but to the good judgment and foresight of the original authors. Although there has been no hesitancy to change rules when practice has required, it is certain that the tendency to make revisions only for good and sufficient reasons has exerted a beneficial stabilizing influence.

The aggregate gains brought about by standardization are inestimable because of the lack of a basis for comparison with the unstandardized state; it is therefore impossible to express in dollars and cents the economies of production and utilization realized, economies which are effective in lowering the selling price of apparatus and the cost of applying it.

Standards Provide Common Language

It is perhaps not so difficult to imagine the difficulties, misunderstandings, and extra labor which might be involved in a hypothetical case assuming that no standards existed. For illustration,

Variable - Speed Motors Driving Spinning Frames





Used for Wide Range of Electrical Machines

Most of the rotating electrical machinery made and used in this country will be designed in accordance with the new American Standards for Rotating Electrical Machinery. The standards cover many kinds of electrical machinery in everyday use, from the large central station generators and large industrial and steel-mill motors to the small motors used on household appliances such as vacuum cleaners and electric fans.

The standards combine, with much new material, the material formerly published by the American Institute of Electrical Engineers in five separate pamphlets and those standards of the National Electrical Manufacturers Association which are of general interest. Work on standards of this kind was begun in 1899 by the A.I.E.E. and in 1910 by the predecessor organization of N.E.M.A.

Photograph Courtesy Westinghouse Electric & Manufacturing Company

consider a simple problem of the application of a motor to a mechanical machine. Assume that the torque characteristics and power required are known. These are quite definite values, thanks to the standardization of units.

As an example, 5 horsepower is a perfectly definite requirement, but a 5-horsepower motor, unless conforming to certain standards, might be very different according to the designer's idea of what a 5-horsepower motor ought to be. It is certainly not exaggerating to state that the capability of such a motor without standardization might vary 100 per cent. That is, depending upon differently assumed conditions and limitations one designer might prescribe a motor inherently half or twice as large or conservative as another.

Standardization Eliminates Waste

It is not difficult to see that the possibilities for misunderstandings, waste effort, and material would be greatly multiplied by the absence of standardization. On the other hand, much engineering labor is avoided by standardization because insofar as machine characteristics are established by standards, these do not have to be re-established for each new application, thus permitting concentration on more important engineering considerations.

To the advantage of what amounts to a common language and basis for transactions, there must also be added the economies to be derived by large-scale production of a limited variety of well chosen ratings and types from which a motor or generator may be selected which is suitable for practically any common purpose.

By simply specifying that the machine conform to the American Standards, the buyer is relieved of further concern, because essential features are established by the standards. Unless his requirements are very special, it is not necessary for him to give any consideration whatever to the details of design. He is assured of obtaining a machine of approximately the same characteristics to do the job, from whatever reputable manufacturer he purchases it. Even so there is still opportunity for the builder to put into the machine qualities of ruggedness, superior materials, and workmanship not specified and which never can be specified by standards.

The standards of the A.I.E.E. and N.E.M.A., which form the basis of this revision, are so well known that only a few particulars regarding changed or added rules will be given here.

Altitude: A more flexible plan than previously recognized is given for the operation of standard machines without special design or change in rating at high altitude, to take advantage of lower existing cooling air temperatures. Advantage is taken of the lower standard temperature rise of general-purpose motors to allow operation at altitudes up to 9900 feet without change in rating.

Temperature Rise: Lower values for machines for electrolytic service are recognized. More specific rules for determining the temperature rise of enclosed motors are given.

Efficiency: Rheostat and exciter losses are now omitted in determining efficiency of direct-current machines to be consistent with the existing practice for synchronous machines and because of the difficulty of knowing in advance whether or not rheostats or exciters will be used in any given installation. Bearing and friction losses for machines furnished with incomplete bearings are included as determined by tests with temporary bearings.

Were it not for the omission of stray load losses in the cases of direct-current machines, synchronous converters, and induction motors, the standards would provide an accurate means of determining the true efficiency of all types of rotating machines. Every effort is being made to devise and establish standard methods for the evaluation of these stray load losses. In the case of induction motors, agreement has been reached on practical methods which henceforth will enable the inclusion of these losses in efficiency guarantees. Unfortunately, agreement on the practice had not been reached in time for insertion of the rule in the present publication.

Regulation of Synchronous Machines: Considerable refinement has been made in the methods of determination including use of the Potier reactance.

Insulation Resistance: Directions in the use of insulation resistance for estimating the condition of the insulation of a machine have been amplified and the formula for values to be expected has been revised to give higher values for large machines.

Eminent Specialists Developed Electrical Machinery Standards

As in all American Standards Association work, a wide range of representatives has served on the Sectional Committee for Rotating Electrical Machinery (C50-1935), the work of which has just been approved by the Association as an American Standard.

L. F. Adams, **National Electrical Manufacturers Association,** ***Chairman***
E. B. Paxton, **American Institute of Electrical Engineers,** ***Secretary***

American Institute of Consulting Engineers, *George Gibbs*
American Institute of Electrical Engineers, *C. A. Adams, P. L. Alger, A. E. Kennelly, J. F. Meyer, E. B. Paxton, W. I. Slichter*
American Marine Standards Committee, *R. A. Beekman*
American Mining Congress, *Carl Lee*
Association of American Railroads, Engineering Division, Electrical Section, *J. V. B. Duer*
American Society of Mechanical Engineers, *H. R. Sewell*
American Transit Association, *H. W. Codding*
Bell Telephone Laboratories, *A. E. Petrie*
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U. S. Navy Department, Bureau of Engineering, *Officer in Charge, Design Division—Specification Section*
U. S. War Department, *Mervin N. Davis*
Members-at-Large, *J. L. Burnham, F. T. Hague, F. B. Hynes, S. H. Mortensen*

Mead Is Elected President of Society of Civil Engineers

Daniel W. Mead, consulting engineer on hydraulic works and power plants, and Professor Emeritus of Hydraulic and Sanitary Engineering, University of Wisconsin, was elected president of the American Society of Civil Engineers at its annual meeting in New York, January 15-17.

Edward P. Lupfer, consulting engineer; Harry W. Dennis, chief civil engineer, Southern California Edison Company; and Carlton S. Proctor, member of the firm of Moran and Proctor, consulting engineers, were elected vice-presidents of the Society.

Mr. Mead and Mr. Dennis are both interested in standards work being carried on under the procedure of the American Standards Association as members of the Sectional Committee on Rating of Rivers.

The American Society of Civil Engineers was one of the founder organizations which set up the American Engineering Standards Committee (now the American Standards Association) in 1918.

Relief to Hard of Hearing Proposed by New Committee

Scientific relief to the more than 5,000,000 men and women who are deaf enough to need mechanical aid will be brought by a new committee which will establish standards of performance for audiophones and other devices to aid hearing, the American Standards Association has announced.

The committee will be headed by Dr. Vern O. Knudsen, chairman of the Standards Association's committee on Acoustical Measurement. He is professor of physics and dean of the graduate school, University of California, Los Angeles. Early this year he was awarded the annual prize of the American Association for the Advancement of Science for his paper on the absorption of sound in gases.

"No one knows what he buys when he purchases a device to aid his hearing, because there are no national standards by which to measure noise," Dr. Knudsen said.

"A doctor can take the temperature of a patient with a thermometer. It is calibrated according to an established standard. You measure carpet with a yardstick and know its length, because we have a standard of measurement.

"An eye specialist has standard lenses to measure the deficiencies of sight, and prescribes glasses which any optician can reproduce by using the national standard for lenses.

"A patient who is hard of hearing should have his hearing measured by a standard meter, under standard conditions. Then the doctor could prescribe an instrument exactly suited to his needs.

"Until the standard has been established and has been made available to ear specialists and instrument manufacturers, the patient will never be sure that he has the correct adjustment.

"Some devices work only in the higher registers; others in low registers.

"A standard will show the efficiency of an instrument in any register. It will determine how much an ear-aid device will amplify, how much distortion it will have, and how noisy it will be.

"Like all American Standards Association committees, this will have representatives of the manufacturers, specialists, and users. Every group having an interest in the problem will be invited to send representatives to help us develop practical and useable standards."

Sir Richard Glazebrook

Sir Richard Glazebrook, pioneer aviation scientist, and an important member of the International Electrotechnical Commission, died December 16 at Limpsfield, Surrey, England, at the age of 81.

Sir Richard was chairman of the Aeronautical Research Committee from its foundation a quarter of a century ago and was also founder and first director of the National Physical Laboratory at Teddington which under his inspiration grew from a few huts on a marshy plain into a great national service.

He made substantial contributions to the work of the International Electrotechnical Commission on electric and magnetic magnitudes and units.

He won the Albert Medal of the Royal Society of Arts in 1918 for his services in the application of natural science to industry. His work at the National Physical Laboratory was rewarded in 1917 with a knighthood.

Sir Richard was president of the Institution of Electrical Engineers in 1906. In 1926 he became a fellow of the Royal Society and was foreign secretary of the Royal Society until 1929.

He was a lecturer in 1881, a Hopkins Prize man of the Cambridge Philosophical Society in 1886, and a Rede lecturer, Cambridge University in 1917. From 1920 to 1923 he was Zaharoff Professor of Aviation and director of the Department of Aeronautics at the Imperial College of Technology. The following year he served as member of the Statutory Commission for the University of Cambridge.

Sir Richard was the author of a number of textbooks dealing with electricity, heat, light, and mechanics, and various other problems of physics.

Society Sets Standards For Aerial Photography

The American Society of Photogrammetry has issued standard specifications for aerial photography and for aerial photographs for stereoscopic plotting of contour maps.

This standardization is especially timely in view of the proposal contained in the National Mapping Plan of the Board of Surveys and Maps for the mapping of some 2,000,000 sq miles by aerial methods.—*Civil Engineering, January.*

Standard Quality Maintained By Statistical Methods

by
John Gaillard

Mechanical Engineer
American Standards Association

New British Book, Reviewed Here, Shows How Engineers Can Use Statistical Methods in Analyzing Causes of Defects in Manufactured Products to Maintain Control of Quality

Methods of Compiling Statistics, and Control Charts for Analyzing Results, Are Explained

THOSE interested in standards for quality will welcome the publication by the British Standards Institution of a book entitled *The Application of Statistical Methods to Industrial Standardization and Quality Control*,[1] by Dr. E. S. Pearson, of University College, London. It presents in concise and clear form the significance of the statistical approach to the problem of quality standards, and describes a number of statistical methods at the disposal of those in charge of writing quality specifications or maintaining quality in manufacturing.

In reading this book one realizes that certain measures applied in practice for many years are not only confirmed as to their basic soundness, but are also clarified and refined, by the statistical approach. As Dr. Pearson formulates it: "Statistical theory is able to give precision to the expected."

This statement is worth considering more fully. Too many quality standards now in existence contain requirements for sampling and testing that do not give any reasonable assurance as to the quality of the product under consideration. Hence, such sampling and testing mean a direct waste of time and money, and possibly a still greater loss because their results cannot be trusted.

Quality Is Variable

In order better to understand the value of the British publication, it may be well to state briefly the case of quality control in the light of its modern conception. Incidentally, the question as to what constitutes "quality" is so involved that it could not possibly be dealt with in a publication such as the one reviewed here. Therefore, the author appears rightly to have assumed that, in speaking about quality, agreement exists that one or more measurable properties of a product determine its quality in terms of suitability for the purpose it has to serve. In some examples given in the book, quality is represented simply by the tensile strength of malleable iron, the ash content of coal, or the length of life of an electric bulb. Against each of such "one-dimensional" quality concepts, there are many complex ones, but the fundamental theory remains the same.

Simple to define as quality may be in some cases, it was found, even before any statistical approach to the problem of its control had been made, that quality cannot be kept at a constant level. At best, it can be kept between two limits; and within the zone lying between these limits, called the tolerance, quality remains subject to variation. In practice the establishment of such limits of control, or manufacturing limits, usually requires that, first, a number of assignable causes of variation be eliminated. For example, holding the diameter of a machine part between definite limits may require the elimination of undue looseness in the spindle bearings of the machine tool used for finishing the part to size.

[1] British Standards Institution No. 600-1935, 161 pages, 5½ x 8½ inches, 25 tables, 17 figures, bound in cloth. Copies may be ordered through the ASA Library at $1.75 each.

In manufacturing, questions such as these arise:

Does the quality of the product as manufactured remain within definite limits?

If so, are these limits close enough to answer the requirements of the product?

If not, can they be narrowed, and what causes of variation may be detected and removed to achieve this?

What is the cost of this narrowing of the limits?

Is getting complete control worth this cost?

This book describes the approach to this problem, including such tools as control charts to be used in analyzing it.

Rather important causes of variation in the product of a plant considered as a whole may be due to peculiarities of individual production machines; to the variety of raw materials coming from several sources of supply, etc. These differences may cause entire groups of units or batches of material to differ distinctly from each other, although the variation of quality within each group or batch is relatively small. This may require that the statistical analysis of quality be based on the subdivision of the product into *rational sub-groups*, each of which is assumed to be subject to a major cause of variation not apparent in the others. For example, defective quality of a steel may be due in one batch to excess of impurities, and in another to improper heat treatment. The new book shows how statistical analysis enables us to differentiate between such causes and rate their influences separately.

Control of Quality

When quality has been brought under control, this control must be maintained. This requires a regular check as to whether it still exists and, if necessary, elimination of the causes of variation that may have sneaked in again, or may not have been discovered before, possibly on account of the lesser frequency with which they affect the product in a perceptible manner. For example, high summer temperatures may appear to cause trouble in a new manufacturing process, while no disturbance occurred when it was started in the spring.

The report very clearly shows the advantages to the producer of applying statistical methods to his problem of getting and keeping control of the quality of his product. This can be done only by the regular collecting and recording of data giving a picture of the product's quality.

The user is in a position different from that of the producer because he generally knows less about the conditions affecting the manufacturing process. When receiving the product from the supplier, he may or may not take it for granted that it has the right quality. In the latter case he will inspect and test the product. When "100 per cent testing" is impossible—the test may be destructive or too expensive—his acceptance or rejection of the product must be based solely on the testing of samples. How many samples are required for making an intelligent decision? How shall these samples be taken? What information do the results of the tests give the user as to the probable quality of the consignment or batch from which the samples were taken? These are a few more of the fundamental questions dealt with in the book.

User Needs Evidence of Control

A great merit of the British document lies in the clarity with which it explains a theory first developed in the writings on this subject by Shewhart and Dodge of the Bell Telephone Laboratories. This is that the testing of samples by a user gives a reasonable basis for judging the quality of the product supplied *only* if the user can be reasonably sure that the producer maintains control of the quality in manufacturing. What does it mean to the user when, say, five test bars taken from a given large number of castings all pass the requirements for tensile strength? Unless there is reasonable assurance that the samples are taken from a product that remains within acceptable limits, there still may be wide variation of quality in the castings not tested and perhaps there even may be an undue frequency in exceeding the limits. On the other hand, if there is reasonable assurance on the user's part that the producer maintains control of quality, it is not necessary for the user to make tests, as these would not really add any information to that already obtained by the producer through the tests made by him to maintain quality. Not having to do any sampling and testing means a considerable saving to the user, for which credit is due to a great extent to the producer.

We realize more clearly now why it is common practice in many industrial concerns to specify that certain products shall be purchased only from "reliable firms," certain quality requirements nevertheless being contained in the purchase specifications and verified by inspection or testing. The basic thought here is that the product should come from a firm that is doing all it can to maintain the quality of its product about a certain level, as otherwise the tests specified in the standard give the purchaser no reasonable assurance of compliance.

Referring to the requirement that definite evidence of control during the process of manufacture be furnished to the user, the author says (p 51):

"For this purpose statistical theory can suggest systems for routine tests in the works which will go far to arm a certifying authority with a real competence to assess the level of control of a product sold under a Mark or guarantee." In other words, "certification" by a manufacturer of the quality of his product, to be of real value to the purchaser, should be much more than the producer's statement that he complies with the standard in question.

The book also briefly discusses the problem of grading or classification to limit the range of variation of certain characteristics in cases where "the total variation in quality to be expected when the whole output on the market is taken into consideration is so large that the specification of a single minimum limit will be inadequate to secure the uniformity which the user desires." (pp 71-72)

Engineers, Statisticians to Cooperate

The author shows why the technical man and the statistician should cooperate in applying the new methods of quality control. He says, referring to the close interlocking of statistical analysis and technical skill (pp 15-16), "The former suggests that a cause of trouble is present; the latter is needed in examining the production processes to identify this cause; and finally the former must again be applied to show whether the trouble has been successfully removed."

In respect to this cooperation, the publication of this document would appear to have a great psychological value. The average engineer is not trained in statistical methods and is often inclined to regard these as requiring a knowledge of a special kind of mathematics with which it is impossible for him to become acquainted, on account of lack of time and pressure of his regular work. The British report will show the engineer interested in quality standards, not only that he cannot afford to disregard the significance of the statistical approach to certain phases of his work, but also that the tools required for such an approach are easily available to him.

The headings of Sections 3 to 9, inclusive, may be mentioned here as an indication of how the book may even serve as a valuable guide to those not particularly expert in statistical methods. They are:

Introduction to the simpler statistical tools (including definitions; the presentation of data; the use of mean and standard deviation in scaling a frequency distribution; and the normal or Gaussian curve);

Sampling and statistical theory (including statistical uniformity and random sampling; levels of control; and sampling methods in practice);

Statistical theory and specification (including the basis of securing conformity to specification, and considerations of importance to producer and user, respectively);

The statistical relationship between sample and batch;

Further examples of the use of statistical methods in securing conformity with specifications by consignment sampling;

Control charts; and

Performance tests and indices of quality (the statistical concept of correlation).

The explanation of the statistical technique is amply illustrated by examples taken from industrial practice and graphic representations.

Dr. Pearson should be congratulated on the admirable clarity and simplicity with which he has presented a subject which, if dealt with in a less comprehensible manner, might have disheartened rather than encouraged many technical men who should benefit by its study.

Worth Executive Attention

As standardization is receiving more and more attention as a distinct function of industrial management, it may be expected that there will also be an increasing amount of interest in the possibilities of cooperation between the engineer and the statistician. Much of the work can be done by technical staffs of industrial concerns and publications such as the British report and the literature included in its list of references, will be quite helpful here. In more complicated cases, statisticians with expert knowledge in this field may have to be called in. The time and effort

New Book Available From ASA Library

Dr. John Gaillard, Mechanical Engineer, American Standards Association, in this article reviews a new publication, *The Application of Statistical Methods to Industrial Standardization and Quality Control*, by Dr. E. S. Pearson, University College, London.

The book was written as the result of a conference called by the British Standards Institution in 1932 at which Dr. Walter A. Shewhart, Bell Telephone Laboratories, met with British manufacturers and others. The conference followed three lectures on the subject by Dr. Shewhart at London University.

The publication, issued by the British Standards Institution, may be ordered through the Library of the American Standards Association at $1.75 a copy.

spent on studying the possibilities of the statistical technique no doubt are a good investment and the subject is, therefore, highly recommended to all industrial executives for their attention.

In the United States, pioneer work in the application of statistical methods to quality control has been done by the technical staff of the Bell Telephone Laboratories, and it is gratifying to note that the document reviewed here was written as the result of a conference between a British group composed of representatives of manufacturing industries and others, and Dr. Walter A. Shewhart, of the Bell Telephone Laboratories. This conference was called by the British Standards Institution in 1932 after Dr. Shewhart had delivered, by invitation, three lectures on the subject at London University.

Among the efforts so far made in this country to stimulate interest in the subject, we may mention the organization of a committee on Interpretation and Presentation of Data of the American Society for Testing Materials, chairman Dr. Anson Hayes, The American Rolling Mill Company, a joint committee on Application of Statistical Method in Engineering of the American Society for Testing Materials and the American Society of Mechanical Engineers, of which Dr. Shewhart is chairman, and a subcommittee on Quality Control, of the ASME Management Division, under the chairmanship of Dr. M. F. Skinker, Brooklyn Edison Company.

No effort has been made, in this brief review, to give a comprehensive picture of the contents of the book. The purpose of this review is rather to bring out the essential problems with which the new publication deals and its value in helping to solve them.

John Campbell

John Campbell, director of the bureau of inspection, Pennsylvania State Department of Labor and Industry, died January 6, in the Polyclinic Hospital, Harrisburg, Pa., following a paralytic stroke.

Mr. Campbell was active in the work of the American Standards Association as a member of the Safety Code Correlating Committee, and ten sectional committees working on standards under ASA procedure. He represented the International Association of Governmental Labor Officials, the International Association of Industrial Accident Boards and Commissions, and the Pennsylvania Department of Labor and Industry on these committees.

Mr. Campbell had been director of the bureau of industrial standards since 1930 and, since August, 1933, he had also been director of the bureau of inspection. He was chairman of the safety advisory board and was secretary of Governor Pinchot's commission on compensation for occupational diseases. He resigned as president and manager of the Harrisburg Manufacturing and Boiler Company to accept the State position in 1930.

He was a graduate of Massachusetts Institute of Technology, and had had wide experience as a designing engineer for foundry and steel products, and during the World War as a consulting engineer for the United States Army. He had also been associated with the Pennsylvania Steel Company and the Central Iron and Steel Company.

A.S.T.M. Issues New Book Of Tentative Standards

The 1935 *Book of A.S.T.M. Tentative Standards*, just published, is larger, due to the number of new tentative specifications and tests approved during the past year, than any previous edition.

Of the 290 specifications, tests, and definitions included in the book in their latest approved form, 48 relate to ferrous metals; 29 to non-ferrous metal products; 54 apply to cementitious, ceramic, concrete and masonry materials; 143 cover such materials as paints, petroleum products, textiles, rubber products, insulation and many others; and the remaining 16 are general testing methods applicable to these materials. In addition, all proposed revisions in standards are given.

In order that any one of the large number of tentative standards can be found easily, there are provided, first, a complete subject index; second, a table of contents listing all items under appropriate subject headings; and third, a second table of contents listing all specifications and tests in the order of number sequence of the serial designations.

The Book of Tentative Standards may be ordered from the American Society for Testing Materials, 260 South Broad Street, Philadelphia.

Asks Bureau to Cooperate on Standard for Oak Flooring

The National Oak Flooring Manufacturers' Association, in December, requested that the National Bureau of Standards cooperate in the establishment of a Commercial Standard for Oak Flooring.

The proposed Commerical Standard, as submitted, covers nomenclature, grading rules, dimensional standards, bundling, grading and inspection tolerances, as well as the manufacturers' recommendations for handling and laying.

Check on Specifications Essential In Good Purchase, Says Oil Official[1]

J. Edgar Pew, Vice-President, Sun Oil Company, Tells Tulsa Purchasing Agents' Association Efficient Purchaser Uses Standards – Leaves Nothing to Chance

INDUSTRY has made great strides in the develment of standard specifications. There is hardly a commodity of any consequence in general use today that is not manufactured in compliance with nationally recognized standards and specifications. The buyer of today must keep fully informed as to these specifications, so that his company is equipped with adequate tools, equipment, or other commodities for the conduct of its business.

I cannot speak of specifications without mentioning the standards of the American Petroleum Institute. These are well-known to all of you. These standards are under continual revision by the various committees. New products and processes are being developed from time to time.

A review of our pipe standards today, compared with five years ago, reveals many changes. Other developments and classes of materials are in the offing.

I can think of no more important responsibility that a purchaser should assume than to keep himself and his operating officials properly advised on the status of these specifications. The Institute's standardization program is, and always will be, one of its most valuable activities.

Specification Is Only Beginning

The mere fact that a purchaser stipulates a certain specification is but the beginning of his responsibility. Of more importance is the verification that material so ordered is actually received, and that it is stamped or identified as called for in the specification.

Instances are known of buyers, who state, "Yes, of course I use A.P.I. standards," and on further investigation are found to have no knowledge whether the material is properly marked, and are rather vague as to whether or not the material actually complies with the specification. This, of course, is not always true, as many companies make careful tests of their material, but many cases are known where the purchaser merely takes the word of the salesman.

Cases are also known where salesmen, in advocating their product, make the statement that the material is "A.P.I." and later investigations have revealed that the specification has only been partly followed.

The Institute has recently amended all of its specifications, to the effect that any of its licensees who misrepresent their products in this manner will have their licenses to use the A.P.I. monogram cancelled.

The careful and conscientious buyer does not leave this matter to chance—he satisfies himself that the goods are received and marked as ordered. Otherwise, all this work on specifications has come to naught, as far as he is concerned.

There is another part that I feel is a primary responsibility of the buyer, and that is to advise with his field and material departments on materials requisitioned for purchase.

Materials are often requisitioned without reference to any particular standard or specification —in some cases they represent the individual opinions or whims of someone in the field, and sometimes represent what is commonly termed "high pressure" salesmanship in the field.

The well-informed buyer should properly question such requisitions, and recommend, if possible, a standard article.

[1]Abstract from address presented by J. Edgar Pew, Vice-President, Sun Oil Company, at Executive Night meeting, Tulsa Purchasing Agents' Association, November 5, published in Philadelphia Purchasor, December, 1935. Mr. Pew is a member of the Board of Directors of the American Standards Association, nominated by the American Petroleum Institute.

Labels on "Painted" Oranges Do Not Protect Consumer, Department of Agriculture Finds

The Department of Agriculture now considers staining of any orange—even if it meets the so-called "maturity ratio" of 8 to 1—may be a violation of the Food and Drug Act and action will be taken after September 1, 1936, against interstate shipments of oranges so stained and against the shippers whenever staining conceals inferiority as to the state of maturity or variety of the fruit.

This important news for orange consumers comes as a result of special investigations which the Food and Drug Administration has been making into the practice of passing off-color oranges through a vat of yellow and orange coal-tar dyes to heighten their sales appeal.

Before the practice got under way, the Department warned the citrus industry, first, that every stained orange must be stamped with a plain declaration of artificial color, and, second, that adding color to immature fruit was a violation of the law even if the label were stamped on the orange. At the same time the Department started its investigation to determine whether color added to legally mature fruit might also in many cases conceal inferiority. "Mature" oranges, legally, are those which measure up to the standard of 8 parts of sugar to 1 of acid.

Many consumer complaints against adding color—showing that consumers were being deceived by such staining even under the required informative labeling—poured in on the Department.

Sufficient information is now available, the Department reports, to conclude that even though oranges may comply with the legal standards of maturity, staining is a violation of the Food and Drugs Act when it is used to make it appear that the oranges have greater maturity and flavor or are of a superior variety.—*Consumers' Guide, December 16, 1935.*

Lack of Grease Standards Handicaps Average User

It is an unfortunate fact that there is available no standardization of greases for certain purposes. Some of the largest users of grease have drawn up for themselves specifications covering certain standard types of greases, evolved as a result of their own past experience with these products.

However, each such specification incorporates some individual's own ideas and although these individual standards may control to a certain extent the properties of the grease, what the user is most interested in is how well the grease will stand up in service.

Considerable work on the standardization of methods for testing grease has already been done by the American Society for Testing Materials. The committee on Petroleum Products and Lubricants (Committee D-2) of this organization has issued a standard method of analysis of grease (D128-27) and a method for the penetration of greases and petroleum (D217-33T).[1]

Past experience has shown that, in general, chemical analysis of grease is of interest primarily to the manufacturer as it enables him to keep a check on his products. But the average consumer is not interested in how a grease is made so long as it has the properties and gives the results in service that he wishes.—*H. A. McConville, Schenectady Works Laboratory, General Electric Company, "Lubricating Greases for Industrial Uses," The General Electric Review, December, 1935.*

[1]These A.S.T.M. standards have been approved by the American Standards Association with the designations Z11.31-1933 and Z11.16-1928.

Fellowships in Traffic Control Offered by Harvard Bureau

The Bureau for Street Traffic Research in Harvard University announces 15 graduate fellowships in the field of street and highway traffic control and administration.

This Bureau was organized in 1925 to provide basic research in connection with traffic accidents and congestion and for the training of men in technical and administrative problems of traffic regulation. Former students of the Bureau now hold many important positions.

This expansion of the training activities of this Bureau has been made possible through grants to Harvard University by the Automobile Manufacturers Association. Those interested may have full details from the Bureau.

Standard Colors for Traffic Signals Most Efficient, Protect Color-Blind

by
Walter S. Paine[1]

Secretary, Sectional Committee on Colors for Traffic Signals

Courtesy Cutler-Hammer, Inc., Photo Underwood & Underwood



UNIFORM international practice in the use of standard colors for traffic signals came one step nearer realization when the 1935 conference of the International Commission on Illumination, held in Germany,[2] adopted specifications for the color of road traffic signals very similar to those approved by the American Standards Association in 1927.

The United States was the first country to have a standard specification on this subject. When the Sectional Committee on Colors for Traffic Signals started its work, various colors were used in the United States for traffic control purposes. In some places as many as 15 different colors or combinations of colors were being used to direct traffic. The choice of colors was frequently diametrically opposed to our present colors. In Chicago, for instance, green was being used on Stop and Go signs to indicate Stop, whereas in railroad practice and in many other places green signified "Go ahead." Not only were red, green, and yellow used for signal lights, but blue, purple, orange were also to be found.

Finding such a variety of practice, the committee undertook a far-reaching research program. They found that a red light of 75 candle power, with an average daylight landscape background, could be identified at a distance of 600 feet, whereas a green light had to be of 250 candle power, a yellow light 750, and a blue light 1,000

[1]Manager, Engineering and Inspection Department, Aetna Life Insurance Company, Hartford, Connecticut.

[2]Dr. M. G. Lloyd, Chief, Section of Safety Codes, National Bureau of Standards, chairman of the Sectional Committee on Colors for Traffic Signals, was United States delegate to this conference.

candle power to be identified at the same distance. It was also found that some colors penetrate fog and smoke better than others. Red and orange, for instance, penetrate fog most easily, although green becomes invisible most quickly in fog.

Because of the greater general visibility of red and green, and because red was found to be popularly associated in the public mind with the idea of danger, the committee agreed upon the present traffic-light color scheme—Red, Stop; Green, Go; Yellow or Amber, Warning.

5,000,000 Color-Blind

The research which led to the decision to make red, green, and yellow the standard colors for traffic lights, also took into consideration the effect of colors on those who are color-blind. Approximately four per cent of the entire population, or nearly 5,000,000 people, it was found, are color-blind to some extent. The greater number of these have difficulty in distinguishing between green and red, but do not have difficulty in distinguishing blue and red. Therefore, the exact shades of red, green, and yellow were specified. In order that most color-blind people can see the change from red to green lights, the green specified in the standard is what is known as admiralty green, and verges very closely on blue.

Recently, it has been held by some of those interested in the safety problem that persons who are color-blind should not be allowed to drive. Such may be the case if the provisions of the standard are not followed carefully, but if the colors specified in the American Standard are used, only in rare cases will a color-blind person have trouble in distinguishing the lights.

Standard Shades Necessary

Traffic engineers and other city officials who buy traffic signals should particularly specify that signal glasses which they purchase must adhere rigidly to the American Standard specifications. Some manufacturers, we find, do not realize the significance of the requirements for exact shades of these traffic colors, and are ignoring the standard specifications. Consequently, the purchaser should be particularly careful to see that he is furnished lenses which are in every respect consistent with the standard.

It is particularly appropriate that this question has come up at this time when the formation of the Motor Carriers Bureau in the Interstate Commerce Commission, and the initiation of the project for inspection of motor vehicles under the procedure of the American Standards Association again bring the question of highway safety to the fore.

Because of the difficulty of educating motorists to drive carefully and intelligently, it is increasingly evident that every mechanical device which can be provided must be used to the maximum of its efficiency.

Fred R. Low

Fred R. Low, an international figure in journalism and engineering, died January 22, at his home, Passaic, New Jersey, where he had been critically ill for several years. He was 75 years old.

A self-made man, whose formal schooling stopped when he was 14, due to severe illness, Mr. Low achieved wide recognition as an engineer and technical editor. At the time of his death, he was Editor Emeritus of the engineering journal *Power*, following 42 years (1888-1930) as its chief editor. He was a past president of the American Society of Mechanical Engineers, and honorary member of the British Institution of Mechanical Engineers (Great Britain).

At the time of his death, Mr. Low was still chairman of two important committees of the American Society of Mechanical Engineers, dealing respectively with the codification of safety rules for the construction of steam boilers and unfired pressure vessels and the rules for testing boilers, turbines, engines, and other power equipment.

Recommendation on Photographic Paper Revised, Takes Effect February 1

The current revision of Simplified Practice Recommendation R98, Photographic Paper, has been accepted by industry and becomes effective February 1, 1936, according to an announcement by the Division of Simplified Practice, National Bureau of Standards.

The original Simplified Practice Recommendation established a simplified list of sizes of photo finishing, portrait and commercial paper, and the width and length of single and double weight rolls. It was approved at a general conference held in 1928, and reaffirmed without change in 1930.

The current revision eliminates one size of the original schedule and adds five new sizes. The revised recommendation will remain in effect until it is again revised by the Standing Committee of the industry.

Mimeographed copies of the recommendation may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Sponsors Withdraw Track Work Standard From ASA Procedure

As a result of a request from the sponsor, the American Transit Association, the American Tentative Standard Specifications for Special Track Work Material (E10-1929) has been withdrawn.

The standard was developed by a sectional committee which was engaged on this and related projects for a number of years prior to 1929.

The situation with respect to this standard has been changed in recent years. At present only the steam railroads, street railways, and manufacturers of material have any particular interest in the standard. In order to keep details of the specifications abreast of the rapid progress in the art of special track work manufacture, the American Railway Engineering Association, representing the steam railway users, and the American Transit Association, representing the street railway interests, have found it desirable to work jointly on the problem rather than to keep the project under ASA procedure.

Interests of manufacturers of special track work who use the specifications are cared for by their representation on committees of the A.R.E.A. and the A.T.A.

Automobile Association Promotes School Course in Safe Driving

Because 95 per cent of the 9,000 automobile drivers who were asked the question, "Do you think that high schools should teach children about traffic laws, causes of accidents, and what their duties will be as drivers?" answered affirmatively, the American Automobile Association has prepared an outline course in traffic safety and driving, and has made the promotion of such education a major safety project.

The pamphlet, *Sportsmanlike Driving*, is No. 1 of a proposed High School Series being prepared by the Association.

Copies may be obtained from the Safety and Traffic Engineering Department, American Automobile Association, Pennsylvania Avenue at 17th Street, Washington, D. C.

Ralph R. Teetor Named President of S.A.E.

Ralph R. Teetor, in charge of engineering, Perfect Circle Company, Hagerstown, Ind., was elected president, and David Beecroft, manager of the New York Office, Bendix Aviation Company, was re-elected treasurer of the Society of Automotive Engineers at its annual meeting in Detroit January 13-17. Mr. Teetor succeeds William B. Stout as president. Mr. Beecroft is serving his fourth term as treasurer of the Society.

The Society of Automotive Engineers is a Member-Body of the American Standards Association, and as such has a voice in determining the administrative and standardization policies of the ASA.

Hoover Represents Vacuum Cleaner Manufacturers on Standards Council

H. L. Hoover, Vice-President, the Hoover Company, Chicago, has been appointed to represent the Vacuum Cleaner Manufacturers Association on the Standards Council of the American Standards Association. The Association became a Member-Body of the ASA on January 1.

David Hays, General Electric Company, Bridgeport, Conn., was appointed to act as Mr. Hoover's alternate representative on the Standards Council.

The Council is in charge of all standardization work under the procedure of the American Standards Association.

Schreiber Is Appointed to Represent Transit Association on ASA Council

Increasing its membership in the American Standards Association, the American Transit Association appointed a second representative and alternate on the Standards Council of the ASA. Martin Schreiber, General Manager in Charge of Plant, Public Service Coordinated Transport, Newark, will represent the Association as its second representative on the Council, which heads the standards work of the ASA. A. A. Lyman, Automotive Engineer, Public Service Coordinated Transport, Newark, will act as Mr. Schreiber's alternate.

Association Asks Help to Establish Commercial Standard for Wool Felt

The National Bureau of Standards has been requested by the Felt Association, Inc., to cooperate in the establishment of a Commercial Standard for wool felt.

Nomenclature, definitions, standard weights and thicknesses, physical and chemical requirements, methods of test, tolerances, and provision for marking and labeling, it is expected, will be covered in the proposed standard.

Wisconsin Department of Purchases Grades Canned Foods Before Buying

Point System of Grading and Comparative Testing of Samples by Experts Simplify Wisconsin's Purchasing of Canned Foods

by
F. X. Ritger

Director, Bureau of Purchases
State of Wisconsin

WHEN the Bureau of Purchases took over the buying of canned goods, I was confronted with a most perplexing problem. The preparation and formation of specifications was not so difficult, inasmuch as the State Department of Agriculture & Markets already had specifications on many items of canned vegetables. These specifications were the result of cooperative effort between the Wisconsin Canners Association and the State Department of Agriculture & Markets. Specifications on other items had to be taken from Federal Government specifications and various other sources.

After I had the specifications in shape, another problem confronted me. Specifications are worse than worthless unless one has some definite, undisputed means of determining whether the specifications are being met.

For canned foods, the services of expert graders is necessary. Graders must of necessity have a thorough knowledge of varieties, production and crop conditions, which have a bearing on the quality. Graders must be equally familiar with the canning process. Mother Nature does not grow its fruits according to specifications.

Official Graders on Staff

The Wisconsin State Department of Agriculture & Markets has expert official graders on its staff and provides official grading service to those canners who may desire to have their products graded. (In such instances official grading certificates are issued.)

The services of these grading experts were made available to me.

Our list of requirements on canned vegetables contains, usually, about 15 different vegetables, in various size containers, of various types and grades—in all about 45 to 55 items.

There are specifications covering each different vegetable in the various grades.

Specifications provide that the bidder must submit two sample cans of each item on which he is bidding. His bid states the price per case. Bids are submitted sealed, and are opened and publicly read. Anybody interested may be present at this opening.

After the bids have been opened and bid price recorded, we proceed to code one of each of the samples submitted by the several bidders. The other sample can is similarly coded, but is placed in our vaults for check against deliveries. Only one person knows the code.

Next we prepare and make up the score book. In this book we have a separate page for each item and post thereon the various bids in order of price. Low price at the top of the page.

Coded samples are then taken to one of our state institutions near Madison, where excellent facilities are available for opening and grading of samples; and where such opened samples can be immediately utilized for food instead of being wasted.

The graders are present, and we proceed to cut the samples in the order of price and the graders, after examination, pronounce the grade. Any pertinent facts are recorded in the score book.

We keep on opening samples on each item until we find one which meets the grade specified; and the score is indicated in score points. In some instances, where we find a sample barely makes the grade, we open the next higher price until we find one which is higher up in the grade point

[1]Abstracted from an article in *The Educational Business Manager and Buyer*, December, 1935.

bracket. The score points in the various grades are as follows: Standard 60-74; Extra Standard or Choice 75-89; Fancy 90-100.

We do not always accept the low priced product even though within the grade. For example, a sample may grade 80 at a price of 2.40 per case, and another may score 89 at a price of 2.43 per case. Obviously, the score of 89 at 2.43 is the better buy.

Delivery Subject to Inspection

After the awards have been determined, the contracts or orders are drawn up. We definitely specify that the product delivered must score at least as many score points as the original sample. The score points of the selected sample is stated in the order. We further provide that all deliveries will be received subject to inspection and grading.

Our specifications provide that if upon inspection and test the product delivered falls short of the grade points specified, but is *still within the grade*, we reserve the right either to reject or accept the product subject to adjusted price. Such adjusted price is based upon price per score point of the original sample at bid price. For example, if the product selected scored 80 points at 2.40 per case, and the product delivered scored but 76 points, we might accept the delivery, subject to a price adjustment of 12 cents per case, or 3 cents per score point on a difference of 4 points.

In every such instance, the vendor is notified and if he does not want to accept the adjusted price, he may replace the delivery with a product which will meet the grade points specified.

Vendor may want a re-test. To this we readily agree. We ask him to be present and bring with him anyone he wishes.

In his presence, the graders open other cans taken from the delivery and if there is still a question, the other reserve original sample is opened and comparison made. We have had no difficulty in reaching a decision.

Reject Below-Grade Product

Product delivered, if found to be below the grade specified, is rejected and replacement demanded.

There have been instances where samples submitted under the bidder's own brand for a fancy-grade product have barely scored a standard grade. There also have been instances where a product under the bidder's own standard brand has scored a fancy grade. While such instances are not frequent, they occur sufficiently often to indicate to me that there is a real need for an official grading service for the entire canning industry, and the jobbers or distributors, as well.

Under present conditions, labels mean nothing as far as determining or denoting grade or quality is concerned. If, however, some official grading service were adopted and instituted, the situation would be vastly different.

Until such service is available, we shall continue under our present method, with such improvements as may prove desirable as time goes on.

Representatives Appointed on Consumers' Advisory Committee

Most of the groups interested in standards for consumers' goods have now appointed representatives on the recently authorized Consumers' Advisory Committee, which will extend the cooperative procedure of the American Standards Association to the development of national standards for consumers' goods.

The Advisory Committee, which for the first time will give consumers' goods standards a definite place in the work of the American Standards Association, was authorized in 1935 by the ASA Board of Directors and Standards Council. The Committee, which will represent the national women's organizations, consumers' groups, distributors, and government experts, will help to determine the policy of the ASA on problems having to do with consumer standards, and will assist in coordinating programs of those organizations which are already working on standards for consumers' goods.

The following organizations have already appointed representatives on the ASA Advisory Committee on Ultimate Consumer Goods:

American Home Economics Association, *Ruth O'Brien, Mrs. J. C. Taylor, (alt.)*
American Association of University Women, *Faith M. Williams*
Consumers' Division, Department of Labor, *Thomas C. Blaisdell, Jr.*
National Association of Purchasing Agents, *G. A. Renard*
National Bureau of Standards, *A. S. McAllister*
National Congress of Parents and Teachers, *Florence Fallgatter*
National League of Women Voters, *Mrs. Harris Baldwin*
U. S. Bureau of Home Economics, *Louise Stanley*

"Miller's Contributions Invaluable to Building Code Committee Work"

The American Standards Association is to be commended on its Building Code Correlating Committee headed by Rudolph P. Miller as chairman. Mr. Miller's contributions to the Department of Commerce publications have been invaluable to building officials and building code revision committees.

The adoption of standardized regulations is severely restricted by antiquated state laws, as shown in the October number of *Industrial Standardization*. The enactment of home rule provisions in municipal and county charters will permit a more general adoption of standardized regulations in building codes.—*C. M. Stegner, Commissioner of Buildings, City of Cincinnati.*

Parker Will Co-ordinate Research For Consolidated Gas Company

John C. Parker, member of the Board of Directors of the American Standards Association, and formerly president of the Brooklyn Edison Company, has been appointed vice-president of the Consolidated Gas Company to direct all activities relating to technical development, research, and experimentation.

"Previously this work has been carried out," the Consolidated Gas Company announced, "by certain of the individual companies of the system, but without correlation of activity. Mr. Parker will co-ordinate and strengthen research and experimentation with a view to the eventual integrated operation of the different gas, steam, and electric companies."

Heating and Ventilating Engineers Guide Issued

In the fourteenth edition of The American Society of Heating & Ventilating Engineers' Guide a large amount of new and revised authoritative engineering data has been assembled on heating, ventilating, and air conditioning, increasing the contents of the Technical Data Section to 792 pages.

The technicians who compiled this new volume have drawn upon the latest researches of the A.S.H.V.E. Laboratory and cooperating institutions with correlating design and application data based on the most recent engineering trends in this expanding industry. The Problems in Practice introduced last year have been continued for each chapter with new and practical examples to amplify the text material.

Four new chapters have been added to the publication to fulfill requests for more detailed information on refrigeration, drying, electric motors, and railway air conditioning.

New York Safety Conference Will Be Held March 3-5

The Seventh Annual Greater New York Safety Conference will be held at the Astor Hotel, New York, March 3, 4, and 5.

Thirty-three sessions, dealing with almost every phase of accident prevention work—in industry, on the streets and highways, in the home, and in the air—are planned, as well as an exhibit showing safety equipment, and methods of prevention.

Sessions of the Conference of special interest as touching on phases of the American Standards Association's safety work cover:

Construction
Building Operation and Maintenance
Small Plant (2 sessions)
Handling Material
Hotels and Restaurants
Accident Prevention Equipment
Safety Exchange
Occupational Diseases (3 sessions)
Industrial Health
Commercial Vehicles (2 sessions)

The Conference is held under the auspices of the Metropolitan Chapter, American Society of Safety Engineers—Engineering Section, the National Safety Council, and 76 cooperating organizations.

A.S.T.M. Committee Will Prepare Specifications for Glazed Brick

A special subcommittee to draw up specification requirements for glazed enameled brick was decided upon at a meeting of the American Society for Testing Materials Committe C-3 on Brick, November 14.

Progress has been made on the work being done by the Bureau of Public Roads on paving brick, it was announced, and the results of this work are to be assembled into a special report for the committee.

Retail Stores Should Be Consumer Purchasing Agents; Need Standards

by
Ephraim Freedman[1]

Chairman, Merchandising Division, Committee on Standards, National Retail Dry Goods Association

Dry Goods Association's Committee on Standards Studies Retail Problems in Attempt to Determine Standards of Durability and Use Value of Consumer Goods

OF what value are all our convention meetings and activities on merchandising if we are not equipped at our own establishments to find out whether garments are washable or sweaters correctly sized, determine the warmth and durability of blankets, the strength of sheeting, whether silver polish is harmful, or chicken feathers are masquerading as goose feathers?

During the year, the Committee on Standards of the National Retail Dry Goods Association has been participating in various studies; *i.e.*:

1. Study of special finishes for fabrics, with particular reference to the terms "waterproof," "water repellent," and "water resistant"
2. Study of size measurements for women's, children's, and infants' shoulder garments
3. Consideration of a definition of percale
4. Development of shrinkage tolerances for woven cotton fabrics
5. Study of standard of construction for domestic refrigerators (participation in discussions with Bureau of Home Economics of Department of Agriculture)
6. Development of Recommended Commercial Standard (CS52-35)
7. Development of Recommended Commercial Standard for Woven Dress Fabrics-Testing and Reporting
8. Appraisal of Proposed Commercial Standard for Wool and Part-Wool Fabrics
9. Proposed Commercial Standard for Woven Elastic Fabrics for Use in Overalls
10. Development of Proposed Tentative Standard for Woven Rayon Underwear
11. Recommended Commercial Standard for Circular Flat Knit Rayon Underwear
12. Recommended Commercial Standard for Worsted Rib Knitted Bathing Suits, and
13. Recommended Commercial Standard for Rib Knitted and Shaker Sweaters.

Considerable time has been devoted to the study of the relative resistance to water of various materials treated by different water-proofing processes. Much data have been accumulated. The Standards Committee is engaged in the study of the findings. There will undoubtedly be brought about a change in the standard terminology for such materials with an accompanying improvement in quality of merchandise and reduction in the number of merchandise complaints.

A draft has been prepared under the auspices of the American Standards Association and about 50 groups have been canvassed in an effort to obtain agreements concerning shrinkage tolerances for woven cotton fabrics. The likelihood that this draft will be accepted as a standard by all groups appears to be remote. This is due to the apparent unwillingness of certain manufacturing groups to mark their merchandise in accordance with these standards. The N.R.D.G.A. and several important consumer organizations, however, have accepted these standards. It may become necessary for the latter groups to set up these standards as their own and insist upon manufacturers supplying them with merchandise marked accordingly. I understand certain of the latter group are willing to do so if retailers insist upon it.

Under date of July 8, 1935, there became effective a Commercial Standard for Mohair Pile

[1]Director, Macy's Bureau of Standards. This article is abstracted from an address presented before the Merchandising Division at the Silver Jubilee Convention of the National Retail Dry Goods Association, New York, January 23.

Fabrics. This standard constitutes a distinct step in the development of worthwhile upholstery velvets and friezes. Naturally, it has shortcomings. The standard is now limited to 100 per cent and 50 per cent pile fabrics. Greater latitude should be provided for percentages other than those now included. Also, retailers and consumers are not particularly interested in the types of moth-repellent materials used but rather in the effectiveness of the treatments. Therefore, an actual performance test should be substituted for the present test which refers to certain patented or trademarked products.

Retailers have reason to feel gratified in the work done by the Standards Committee in the development of the Recommended Commercial Standard for Woven Dress Fabrics. This standard provides regular methods of testing and reporting of woven dress fabrics with reference to breaking strength; color fastness to crocking (rubbing); cleaning (dry and wet); drypressing; laundering, light and perspiration; shrinkage in laundering and cleaning, dry and wet; and yarn slippage of dress fabrics. The purpose as quoted in the Recommended Commercial Standard is as follows:

"The purposes are to provide standard methods of testing and reporting dress fabrics from the standpoint of serviceability for the guidance of testing laboratories in order to eliminate confusion resulting from a diversity of testing methods and to provide a uniform basis for reporting results of tests. It is expected that comparability and reproductibility of test results will be attained thereby for the benefit of producers, distributors, and users."

Assistance in securing its general recognition in use is urged upon all. On December 16, 1935, there was held in New York City a general conference on wool and part-wool fabrics, and a Recommended Commercial Standard covering this subject was adopted. This committee took an active part in framing this standard.

Guard Against Improper Labels

It is important that retailers scrutinize carefully all standards for the purpose of guarding themselves against the use of meaningless and misleading labels, improper test methods, and unwarranted interpretation of the results of such tests.

The work of our committee has been seriously hampered, however, because there are neither a sufficient number of properly trained individuals in the retail field nor the necessary equipment with which to prosecute the work. Manpower and equipment are necessary if retailers are to benefit in a more practical way, but these are lacking. The reason for this condition is probably because the average retailer feels that an active study of Merchandise Standards is not as necessary as merchandising, advertising, control, maintenance, or supply. Probably, he has sufficient faith in his sources of supply. Or maybe he would rather let the other fellow do the work and follow if and when the other fellow's efforts produce beneficial results.

Unsatisfactory Merchandise "Shuttled"

Irrespective of what may be the views of the average retailer, there are certain matters which he no longer can afford to overlook. Unsatisfactory merchandise is shuttled from one retailer to another. When I say that merchandise is being shuttled, I mean just that, but apparently the average retailer is not aware of it. Some months ago we rejected a shipment of dresses which were not washable. They found their way to another store. The other merchant didn't know it because he did not have the man-power and the equipment with which to find out.

We turned down a balloon set because the gas was inflammable and the salt used to produce the gas developed corrosive acid, enough so as to come under the Federal Caustic Poison Act.

Recently a manufacturer sold a small retailer a bag of feathers which were held by the State of New York to be unclean. Fortunately in this instance the law holds the manufacturer and not the retailer responsible for shortcomings in articles of bedding and upholstered furniture, but this is a rare instance.

Ultimatums as to what a retailer may or may not call a product or a service are frequently thrust across his threshold. His poor-quality complaints increase. He is in danger of relinquishing the power of self-expression to other groups, and unless he awakens to his predicament he may lose it entirely. The time has come when we retailers must take greater cognizance of the difficulties which beset us and act accordingly.

Let us more actively align ourselves with the ultimate consumer. Cease being distributing agents for manufacturers and in lieu thereof, let us act as better consumer purchasing agents. Let us create, maintain, and defend a proper descriptive terminology for merchandise. Insist on having merchandise marked in accordance with standard specifications approved by retailers. Employ the necessary scientific and technical staff to corroborate the claims made by manufacturers. Equip this staff with the apparatus, supplies, and technical library necessary for the proper conduct of their investigations. Insist that these investigators hold foremost the needs of the consumer

and that they make no commercial alliances with manufacturing interests. Encourage the development of necessary standards and lend more active support to their enactment and maintenance.

Bureau of Standards Issues Report on Building Exits

The results of a study of building exits have just been published by the National Bureau of Standards.

The desirability of obtaining data on building exits was recognized following a joint conference held some years ago by the Department of Commerce Building Code Committee and the Building Exits Code Committee of the American Standards Association at which it was agreed that a study could profitably be made of exit design, practice, and performance, with special attention to buildings erected within the last ten years.

Publication of data obtained was considered desirable by representatives of these two committees when the question was last considered in July, 1934.

The investigation brought out wide differences in building code requirements with respect to the number, size, and design of exits. Data covering surveys of code practice in providing exits and discussing rates at which people can make their escape through different kinds of exits are given. Methods employed in the surveys and the results obtained are presented in detail. Five methods of calculating exit width in current use are discussed. Suggestions for building code requirements for building exits are presented.

The publication—Design and Construction of Building Exits (Miscellaneous Publication M151 of the National Bureau of Standards)—may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at ten cents a copy.

Russian Standards Are Developing More Complete Quality Requirements

Quality requirements stipulated in Russian specifications and standards are becoming more complete and more complicated, according to an article in *Vestnik Standartizatsii*, official organ of the USSR Standards Committee, March-April, 1935.

The author stresses the importance of setting up, in addition to purely operative standards, basic standards, which establish complete classifications of items and their quality indices.

Standard Identification Methods Bringing Color Under Control

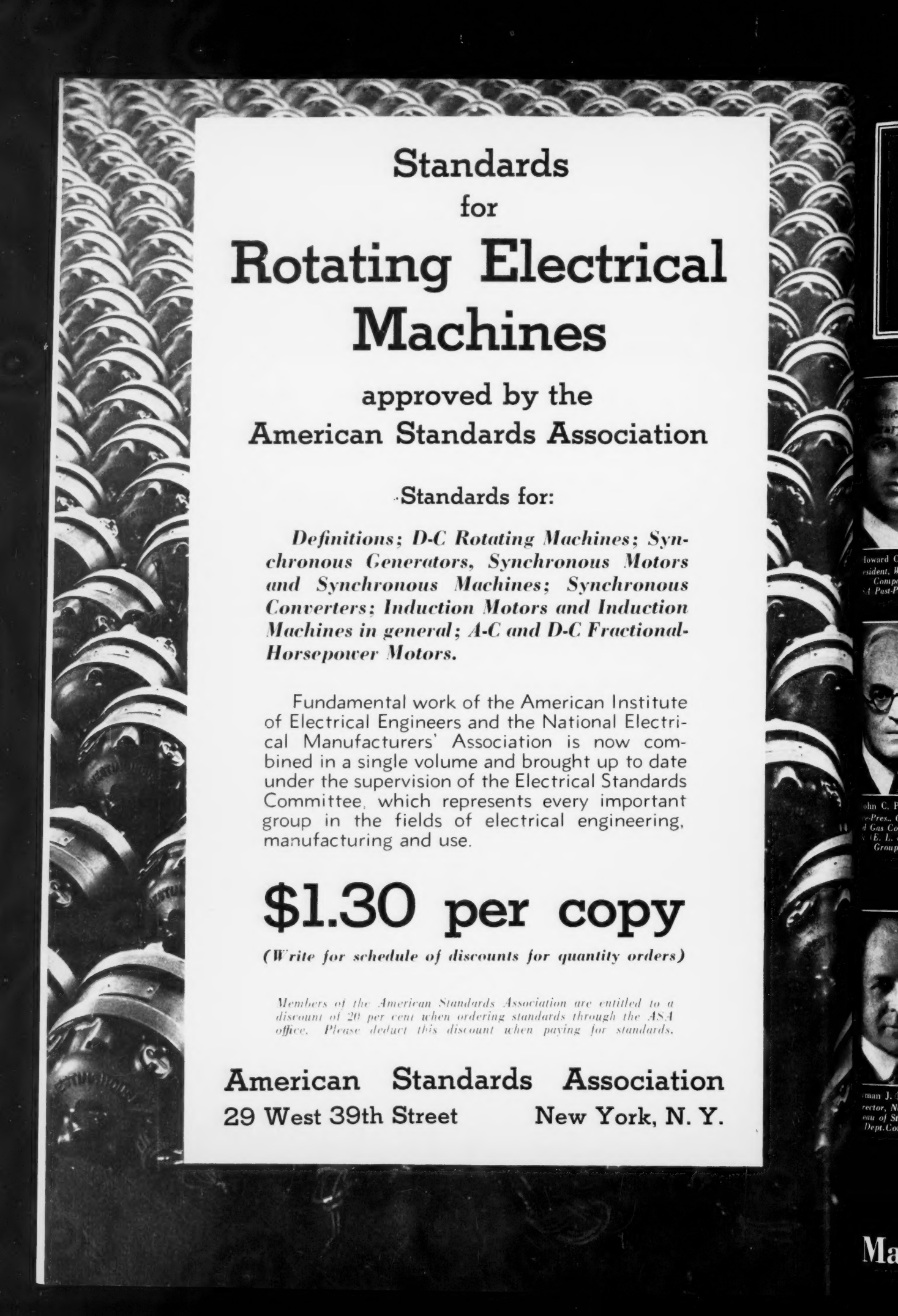
The widespread use of color advertising has developed a demand for more exact knowledge of color and more scientific methods for its control. The mechanical difficulties involved in the use of color, embracing as they do the exact reproduction of original illustrations under varying conditions as to paper and equipment used, deserve more attention than they formerly received.

Manufacturers of inks, such as the International Printing Ink Company, have been making available to advertisers the results of some of their studies, which have covered the technical questions involved in the purely physical measurement of color in terms of the spectrum, as well as the variations in color effects produced by different color combinations and papers employed. This is exceedingly interesting and valuable work, and should be continued.

These studies have already aided in the development of methods by means of which it is possible to identify colors by exact numbers, instead of by description or even by sample, both of which are decidedly dubious because of wide variations in conditions. Thus production may be speeded up by the use of these symbols in enabling printers at widely separated points to know exactly what colors are to be employed.

Few advertisers realize the importance of paper in determining the final color of the printed piece. Both the chemical content of the paper and its own color contribute to the final result. Thus in considering color printing, the contributions of the paper manufacturer become of primary significance.

All of the developments recently recorded in this field justify the prediction that scientific control of the production of color advertising is definitely at hand.—*Advertising Age, December 2, 1935.*



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